



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,896	03/07/2005	Katsuya Hasegawa	017700-0173	7835
23392	7590	01/09/2008		
FOLEY & LARDNER 2029 CENTURY PARK EAST SUITE 3500 LOS ANGELES, CA 90067			EXAMINER AUSTIN, AARON	
			ART UNIT 1794	PAPER NUMBER
			MAIL DATE 01/09/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/526,896	HASEGAWA ET AL.	
	Examiner	Art Unit	
	Aaron S. Austin	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/19/07.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 9-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 9-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20071219, 2007 0426</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 11 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In particular, the claimed range for thickness is not supported by the specification. While the specification does provide support for the value of 1.0 micron, it does not provide support or suggestion of a value of 0.4 microns. One of ordinary skill in the art could not read the specification and arrive upon the claimed range.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-5 and 9-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In particular, claim 1, line 10 recites a formula of $RE_{1+x}Ba_{2-x}Cu_3O_{7-y}$ (Sm 123) without defining the values of x and y. Therefore, as the true molar values are not clearly set by the claim it is indefinite.

Claim Rejections - 35 USC § 102 & 103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 and 9-11 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hasegawa et al. ("Preparation of $\text{SmBa}_2\text{Cu}_3\text{O}_y$ Films with Improved In-plane Alignment by Pulse Laser Deposition", J. Japan Inst. Metals, 20 April, 2002, Vol. 66, No. 4, pages 320-328).

Hasegawa et al. teach a $\text{REBa}_2\text{Cu}_3\text{O}_y$ (Sm 123) thin film formed on an underlayer of BaZrO_3 (abstract and page 1, column 1). A BaO atomic layer commonly contained between the thin film and the underlayer is shared at an interface of these two layers. In the region directly adjacent to the interface, the ratio of crystalline regions having grown with an orientation of less than 1.6 degrees on the basis of crystal orientation of the underlayer is 50% or more as evidenced by the X-ray diffraction data. The underlayer is single crystalline.

There appears to be a conflict in interpretation of the Japanese translation of the Hasegawa et al. reference with respect to the thickness of the Sm 123 film.

Hasegawa et al. do appear to teach an exemplary film thickness of 0.4 microns (see page 10, line 14 of the translation supplied by the USPTO Translation Branch). It would appear that the original Japanese document supports a value of 0.4 microns (page 3, line 14) rather than a value of 0.04 microns as recited in the translation supplied by applicant (page 6, line 14). In either case, as an alternative interpretation of the reference, it would also have been obvious to one having ordinary skill in the art at the time the invention was made to develop the film at the thickness claimed, since such a/ modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984).

Further, while Hasegawa et al. do teach a temperature higher than 91 K (page 10, line 16 and Fig. 3), they do not appear to teach the thin film as superconductive at a temperature higher than 91 K and having a critical current density of more than 4×10^5 A/cm², when a magnetic field of at least 1T is applied parallel to a c axis of the Sm123 film at a temperature of 77 K or greater. However as like materials are used and formed in a like manner, they are expected to have the same physical properties.

Regarding claim 2, stacked-layer crystal structures are taught.

Regarding claims 3 and 4, perovskite type compounds are taught as the thin film and underlayer.

Regarding claim 5, the difference in lattice constant as claimed is taught.

Regarding claim 8, superconductivity is taught at a temperature of 93 K.

Regarding claim 9, as like materials are used in a like manner, the interface energy is expected to be the same as claimed.

Regarding claim 10, the language used is product by process. The above arguments establish a rationale tending to show the claimed product is the same as what is taught by the prior art. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 227 USPQ 964,966. Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113.

Regarding claim 11, Hasegawa et al. do appear to teach an exemplary film thickness of 0.4 microns (see page 10, line 14 of the translation supplied by the USPTO Translation Branch). It would appear that the original Japanese document supports a value of 0.4 microns (page 3, line 14) rather than a value of 0.04 microns as recited in the translation supplied by applicant (page 6, line 14). In either case, as an alternative interpretation of the reference, it would also have been obvious to one having ordinary skill in the art at the time the invention was made to develop the film at the thickness

claimed, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984). Even further, a thickness of 0.4 microns is substantially close to that of the instant claims such that one of ordinary skill would have expected compositions that are in such close proportions to those in prior art to be prima facie obvious, and to have same properties. *Titanium Metals Corp.*, 227 USPQ 773 (CA FC 1985).

Response to Arguments

Applicant's arguments filed 12/19/07 been fully considered but they are not persuasive.

First, Applicant argues with respect to the rejections under 35 USC 102 there is no anticipation when ranges only partially overlap. However, prior art which teaches a range within, overlapping, or touching the claimed range anticipates if the prior art range does not substantially deviate from the claimed range. *Perricone v. Medicis Pharmaceutical Corp.*, 77 USPQ 1321, 1327 (Fed. Cir. 2005)(anticipation found even where prior art range was not identical to claimed ranges); see also MPEP 2131.03 and *Ex parte Lee*, 31 USPQ2d 1105 (Bd. Pat. App. & Inter. 1993). In the present case, an exemplary thickness of 0.4 microns is provided by the Hasegawa et al. reference (see page 10, line 14 of the translation supplied by the USPTO Translation Branch). Thus there is at least one overlapping value between the claimed range and that taught by the reference. Furthermore, as like materials are used and formed in a like manner, the

product taught by the reference is not expected to substantially deviate from the narrow range claimed. As such, the claimed range is considered to be taught with "sufficient specificity" by the reference. MPEP 2131.03 II.

Second, Applicant argues with respect to the rejections under 35 USC 103 the increased film thickness results in improved critical temperature and critical current exemplifying unexpected results. However, this argument is not found to be convincing as the reference teaches a value for a thickness within the claimed range (see page 10, line 14 of the translation supplied by the USPTO Translation Branch). Therefore, as like materials are used in a like manner, the benefits of increased thickness as argued by Applicant are expected to be a part of the product taught by the reference. More particularly, the product of the reference is expected to behave under the influence of a magnetic field as claimed, whether recognized by the authors at the time or not. If the prior art compound does in fact possess a particular benefit, even though the benefit is not recognized in the prior art, applicant's recognition of the benefit is not in itself sufficient to distinguish the claimed compound from the prior art. *In re Dillon*, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1991); MPEP 2144.09 VII.

Moreover, in response to the argument that Hasegawa et al. were unable to attain sufficient superconductive characteristics as evidence of unexpected results, Applicant has erroneously pointed to page 3, lines 12-16 for support of this contention. The discussion at this point in the reference relates to prior art methods, not that taught by Hasegawa et al. In fact, the substance of the reference itself tends to argue that the

Art Unit: 1794

teachings therein serve to alleviate this problem in the prior art. The argument is therefore unconvincing.

Third, Applicant argues Hasegawa et al. fail to teach the newly claimed thickness of greater than 0.4 to 1 micron. However, Hasegawa et al. do appear to teach a film thickness of 0.4 microns (see page 10, line 14 of the translation supplied by the USPTO Translation Branch). The value is exemplary, not limiting. It would have been obvious to one having ordinary skill in the art at the time the invention was made to develop the film at the thickness claimed, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984). Even further, a thickness of 0.4 microns is substantially close to that of the instant claims such that one of ordinary skill would have expected compositions that are in such close proportions to those in prior art to be prima facie obvious, and to have same properties. *Titanium Metals Corp.*, 227 USPQ 773 (CA FC 1985).

Conclusion

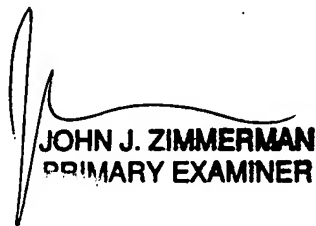
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron S. Austin whose telephone number is (571) 272-8935. The examiner can normally be reached on Monday-Friday: 7:30 AM to 4:00 PM.

Art Unit: 1794

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ASA



JOHN J. ZIMMERMAN
PRIMARY EXAMINER